

AMENDMENTS TO THE CLAIMS

For the convenience of the Examiner, all claims have been presented whether or not an amendment has been made. The claims have been amended as follows:

1. **(Currently Amended)** A method for tuning a transconductor, comprising:
receiving a digital value;
determining a bit value for a selected bit of the digital value;
selecting a tuning range for a transconductor based on the bit value; and
tuning the transconductor within the selected range based on any remaining bits in the digital value; by:

~~selecting an additional bit of the digital value; and~~

~~selecting a subrange within the range based on the value of the additional bit.~~

wherein:

the transconductor comprises a first transconductor and a second transconductor;

selecting the tuning range comprises selecting a gain for the first transconductor and a gain range for the second transconductor; and

tuning the transconductor comprises:

producing an output current of the transconductor using an output current of the first transconductor and an output current of the second transconductor; and

tuning a gain of the second transconductor within the gain range based on the remaining bits of the digital value.

2. **(Original)** The method of Claim 1, wherein selecting the tuning range comprises selecting a resistor from a plurality of resistors.

3. **(Original)** The method of Claim 1, wherein tuning the transconductor comprises:

converting the remaining bits into an analog signal; and
tuning the transconductor based on the analog signal.

4. (Cancelled)

5. (Currently Amended) The method of Claim 1, **further comprising:**
selecting an additional bit of the digital value; and
selecting a subrange within the range based on the value of the additional bit.

~~wherein:~~

~~the transconductor comprises a first transconductor and a second transconductor;~~

~~selecting the tuning range comprises selecting a gain for the first transconductor and a gain range for the second transconductor; and~~

~~tuning the transconductor comprises:~~

~~producing an output current of the transconductor using an output current of the first transconductor and an output current of the second transconductor; and~~

~~tuning a gain of the second transconductor within the gain range based on the remaining bits of the digital value.~~

6. (Original) The method of Claim 1, wherein the transconductor is used to form a selected one of a filter, amplifier, mixer, integrator, or charge pump.

7. **(Currently Amended)** A transconductor circuit, comprising:
a digital-to-analog module operable to receive a digital value and to determine a bit value for a selected bit of the digital value;
a digital control module operable to select a tuning range for a transconductor based on the bit value; and
an analog control module operable to tune the transconductor within the selected range based on any remaining bits in the digital value;

wherein:

the transconductor comprises a first transconductor and a second transconductor, each transconductor producing a respective output current, wherein an output current of the transconductor is produced using the output currents of the first and second transconductors;

the digital control module is further operable to select the tuning range by selecting a gain for the first transconductor and a gain range for the second transconductor; and

the analog control module is further operable to tune a gain of the second transconductor within the gain range based on the remaining bits of the digital value.

~~the digital-to-analog module is further operable to select an additional bit of the digital value; and~~

~~the digital control module is further operable to select a subrange within the range based on the value of the additional bit.~~

8. **(Original)** The circuit of Claim 7, wherein the digital control module is further operable to select the tuning range by selecting a resistor from a plurality of resistors.

9. **(Original)** The circuit of Claim 7, wherein:
the digital-to-analog module is further operable to convert the remaining bits into an analog signal; and
the analog control module is further operable to tune the transconductor based on the analog signal.

10. (Cancelled)

11. (Currently Amended) The circuit of Claim 7, wherein:

the digital-to-analog module is further operable to select an additional bit of the digital value; and

the digital control module is further operable to select a subrange within the range based on the value of the additional bit.

~~the transconductor comprises a first transconductor and a second transconductor, each transconductor producing a respective output current, wherein an output current of the transconductor is produced using the output currents of the first and second transconductors;~~

~~the digital control module is further operable to select the tuning range by selecting a gain for the first transconductor and a gain range for the second transconductor;~~

~~the analog control module is further operable to tune a gain of the second transconductor within the gain range based on the remaining bits of the digital value.~~

12. (Original) The circuit of Claim 7, wherein the transconductor is used to form a selected one of a filter, amplifier, mixer, integrator, or charge pump.

13. **(Original)** A circuit, comprising:
a first transconductor;
a second transconductor coupled to the first transconductor such that the first and second transconductors are operable to produce a combined output current from respective output currents of the first and second transconductors;
a digital-to-analog module operable to:
 receive a digital value;
 extract one or more bits from the digital value; and
 convert the remaining bits of the digital value into an analog signal;
a digital control module operable to:
 receive the one or more bits as a digital signal; and
 select a gain for the first transconductor and a gain range for the second transconductor based on the digital signal; and
an analog control module operable to:
 receive the analog signal; and
 tune a gain of the second transconductor within the gain range based on the analog signal.
14. **(Original)** The circuit of Claim 13, wherein the digital control module selects a gain for the first transconductor and a gain range for the second transconductor at least in part based on a selected bit of the digital signal.
15. **(Original)** The circuit of Claim 13, wherein the digital control module selects the gain of the first transconductor and the gain range of the second transconductor by selecting one of a plurality of resistors.
16. **(Original)** The circuit of Claim 13, wherein the circuit is used to form a selected one of a filter, amplifier, mixer, integrator, or charge pump.

17. **(Currently Amended)** ~~Software embodied in a computer readable medium~~ and A computer readable medium storing software, the software when executed operable to perform:

receiving a digital value;
determining a bit value for a selected bit of the digital value;
selecting a tuning range for a transconductor based on the bit value; and
tuning the transconductor within the selected range based on any remaining bits in the digital value; ~~by:~~

~~selecting an additional bit of the digital value; and
selecting a subrange within the range based on the value of the additional bit.~~

wherein:

the transconductor comprises a first transconductor and a second transconductor;

selecting the tuning range comprises selecting a gain for the first transconductor and a gain range for the second transconductor; and

tuning the transconductor comprises:

producing an output current of the transconductor using an output current of the first transconductor and an output current of the second transconductor; and

tuning a gain of the second transconductor within the gain range based on the remaining bits of the digital value.

18. **(Currently Amended)** The software computer readable medium of Claim 17, wherein selecting the tuning range comprises selecting a resistor from a plurality of resistors.

19. **(Currently Amended)** The software computer readable medium of Claim 17, wherein tuning the transconductor comprises:

converting the remaining bits into an analog signal; and
tuning the transconductor based on the analog signal.

20. (Cancelled)

21. (Currently Amended) The software computer readable medium of Claim 17, wherein the software is further operable to perform:

selecting an additional bit of the digital value; and

selecting a subrange within the range based on the value of the additional bit.

wherein:

~~the transconductor comprises a first transconductor and a second transconductor;~~

~~selecting the tuning range comprises selecting a gain for the first transconductor and a gain range for the second transconductor; and~~

~~tuning the transconductor comprises:~~

~~producing an output current of the transconductor using an output current of the first transconductor and an output current of the second transconductor; and~~

~~tuning a gain of the second transconductor within the gain range based on the remaining bits of the digital value.~~

22. (Currently Amended) The software computer readable medium of Claim 17, wherein the transconductor is used to form a selected one of a filter, amplifier, mixer, integrator, or charge pump.

23. **(Currently Amended)** A system, comprising:
means for receiving a digital value;
means for determining a bit value for a selected bit of the digital value;
means for selecting a tuning range for a transconductor based on the bit value; and
means for tuning the transconductor within the selected range based on any remaining
bits in the digital value;

wherein:

**the transconductor comprises a first transconductor and a second
transconductor;**

**the means for selecting the tuning range further selects a gain for the first
transconductor and a gain range for the second transconductor; and**

the means for tuning the transconductor further:

**produces an output current of the transconductor using an output
current of the first transconductor and an output current of the second
transconductor; and**

**tunes a gain of the second transconductor within the gain range
based on the remaining bits of the digital value.**

~~wherein:~~

~~the means for determining further determines an additional bit of the digital
value; and~~

~~the means for selecting further selects a subrange within the range based on
the value of the additional bit.~~